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We Claim:

1. A method for amplifying at least a first and second diversity-encoded signal, each of which represents information represented by a first signal to be transmitted using transmit diversity, and for amplifying a second signal to be transmitted without using transmit diversity, the method comprising the steps of:

sharing the amplification of the at least first and second diversity-encoded signals between at least two amplifiers; and

sharing the amplification of the second signal between the at least two amplifiers.

2. The method of claim 1, wherein the first and second sharing steps are carried out concurrently.

3. The method of claim 1,

further comprising the step of forming at least first and second composite signals as functions of the at least first and second diversity-encoded signals; and

wherein the first of the sharing steps comprises the steps of:

amplifying the first composite signal in a first amplifier of the at least two amplifiers; and

amplifying the second composite signal in a second amplifier of the at least two amplifiers.

4. The method of claim 3,

further comprising the step of forming the at least first and second composite signals as functions of the second signal; and

wherein the second of the sharing steps comprises the steps of:

amplifying the first composite signal in a first amplifier of the at least two amplifiers; and

amplifying the second composite signal in a second amplifier of the at least two amplifiers.

5. The method of claim 3, wherein the step of forming the at least first and second composite signals is performed in the digital domain.

6. The method of claim 5,
further comprising the steps of:
pre-distorting the first composite signal; and
pre-distorting the second composite signal; and
wherein the steps of amplifying the first and second composite signals comprise amplifying the pre-distorted first and second composite signals.

7. The method of claim 1,
further comprising the step of forming at least first and second composite signals as functions of the second signal; and
wherein the second of the sharing steps comprises the steps of:
amplifying the first composite signal in a first amplifier of the at least two amplifiers; and
amplifying the second composite signal in a second amplifier of the at least two amplifiers.

8. A method for processing at least a first diversity-encoded signal and a second diversity-encoded signal each of which represents information represented by a first signal, the method comprising the steps of:
forming at least first and second composite signals as functions of the at least first and second diversity-encoded signals;
amplifying the first composite signal in a first amplifier to produce an amplified first composite signal;
amplifying the second composite signal in a second amplifier to produce an amplified second composite signal; and

forming amplified first and second diversity-encoded signals as functions of at least the amplified first and second composite signals.

9. The method of claim 8, wherein:

the amplified first diversity-encoded signal comprises an amplified phase-shifted first diversity-encoded signal; and

the amplified second diversity-encoded signal comprises an amplified phase-shifted second diversity-encoded signal.

10. The method of claim 8, wherein:

the first composite signal is a function of a combination of the first diversity-encoded signal with a phase-shifted version of the second diversity-encoded signal; and

the second composite signal is a function of a combination of the second diversity-encoded signal with a phase-shifted version of the first diversity-encoded signal.

11. The method of claim 8, wherein:

the amplified first diversity-encoded signal is a function of a combination of the amplified first composite signal with a phase-shifted version of the amplified second composite signal; and

the amplified second diversity-encoded signal is a function of a combination of the amplified second composite signal with a phase-shifted version of the amplified first composite signal.

12. The method of claim 8, wherein:

the first composite signal is a function of a sum of the first diversity-encoded signal and of the second diversity-encoded signal; and

the second composite signal is a function of a difference between the first diversity-encoded signal and the second diversity-encoded signal.

13. The method of claim 8, wherein:

the amplified first diversity-encoded signal is a function of a sum of the amplified first composite signal and the amplified second composite signal; and

the amplified second diversity-encoded signal is a function of a difference of the amplified first composite signal and the amplified second composite signal.

14. The method of claim 8, further comprising the steps of:

transmitting the amplified first diversity-encoded signal over a first antenna; and

transmitting the amplified second diversity-encoded signal over a second antenna.

15. The method of claim 8, further comprising the steps of:

forming the at least first and second composite signals as functions of a second signal; and

forming an amplified second signal as a function of at least the amplified first and second composite signals.

16. The method of claim 8, wherein the step of forming the at least first and second composite signals is performed in the digital domain.

17. The method of claim16,

further comprising the steps of:

pre-distorting the first composite signal; and

pre-distorting the second composite signal; and

wherein the steps of amplifying the first and second composite signals comprise amplifying the pre-distorted first and second composite signals.

18. A transmitter comprising:

a first device for forming at least a first and second composite signals as functions of at least first and second diversity-encoded signals, the first and second diversity-encoded signal representing information represented by a first signal;

a first amplifier having an input coupled to the first device, the amplifier amplifying the first composite signals to produce an amplified first composite signal;

a second amplifier having an input coupled to the first device, the amplifier amplifying the second composite signal to produce an amplified second composite signal; and

a second device having a first input coupled to an output of the first amplifier and having a second input coupled to an output of the second amplifier, the second device for forming amplified first and second diversity-encoded signals as functions of at least the amplified first and second composite signals.

19. The transmitter of claim 18, wherein the first device comprises:

channel processing circuitry; and

at least one radio for forming the first and second composite signals.

20. The transmitter of claim 18, wherein

the first device comprises:

channel processing circuitry;

at least one radio; and

a first hybrid combiner having an input coupled to an output of the radio, a first output coupled to the first amplifier, and a second output coupled to the second amplifier, the first hybrid combiner forming the first and second composite signals; and

the second device comprises a second hybrid combiner having a first input coupled to the first amplifier, and a second input coupled to the second amplifier.

21. The transmitter of claim 20, wherein the first and second hybrid combiners comprise 90° hybrid combiners.

22. The transmitter of claim 18, wherein:

the first device further comprises a digital predistorter having an output coupled to the first and second amplifiers, the digital predistorter pre-distorts the first composite signal and the second composite signal;

the first amplifier amplifies the pre-distorted first composite signal to produce the amplified first composite signal; and

the second amplifier amplifies the pre-distorted second composite signal to produce the amplified second composite signal.

23. The transmitter of claim 18, wherein:

the amplified first diversity-encoded signal comprises an amplified phase-shifted first diversity-encoded signal; and

the amplified second diversity-encoded signal comprises an amplified phase-shifted second diversity-encoded signal.

24. An apparatus comprising:

at least one antenna; and

a transmitter coupled to at least one of the at least one antennas, the transmitter comprising:

a first device for forming at least a first and second composite signals as functions of at least first and second diversity-encoded signals, the first and second diversity-encoded signal representing information represented by a first signal;

a first amplifier having an input coupled to the first device, the amplifier amplifying the first composite signals to produce an amplified first composite signal;

a second amplifier having an input coupled to the first device, the amplifier amplifying the second composite signal to produce an amplified second composite signal; and

a second device having a first input coupled to an output of the first amplifier and having a second input coupled to an output of the second amplifier, the second device for forming amplified first and second diversity-encoded signals as functions of at least the amplified first and second composite signals.

25. The apparatus of claim 24, wherein the first device comprises:

channel processing circuitry; and

at least one radio for forming the first and second composite signals.

26. The apparatus of claim 24, wherein

the first device comprises:

channel processing circuitry;

at least one radio; and

a first hybrid combiner having an input coupled to an output the radio, a first output coupled to the first amplifier, and a second output coupled to the second amplifier, the first hybrid combiner forming the first and second composite signals; and

the second device comprises a second hybrid combiner having a first input coupled to the first amplifier, and a second input coupled to the second amplifier.

27. The apparatus of claim 26, wherein the first and second hybrid combiners comprise 90° hybrid combiners.

28. The apparatus of claim 24, wherein:

the first device further comprises a digital predistorter having an output coupled to the first and second amplifiers, the digital predistorter pre-distorts the first composite signal and the second composite signal;

the first amplifier amplifies the pre-distorted first composite signal to produce the amplified first composite signal; and

the second amplifier amplifies the pre-distorted second composite signal to produce the amplified second composite signal.

29. The apparatus of claim 24, wherein:

the amplified first diversity-encoded signal comprises an amplified phase-shifted first diversity-encoded signal; and

the amplified second diversity-encoded signal comprises an amplified phase-shifted second diversity-encoded signal.

30. The apparatus of claim 24, wherein the apparatus includes at least two antennas and the transmitter is coupled to at least two of the antennas.

31. The apparatus of claim 24, wherein the apparatus further comprises a receiver coupled to at least one of the antennas.

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